Office Memorandum • UNITED STATES GOVERNMENT

TO : The Files, RS-13, [redacted] DATE: 22 July 1955 50X1

FROM : [redacted]

SUBJECT: Trip Report, Field Testing - RS-13

1. During the week of 11 July, additional field testing of the RS-13 system was conducted by [redacted] 50X1 O&T/AAB, operating from sites in St. Louis, Mo., and Denver, Colorado. [redacted] of the Security Division, I&S, accompanied the group to 50X1 provide cover and liaison with such people we would contact in the performance of our duties.

2. The equipment carried consisted of two units of the RS-13, and one unit of RS-6 to provide a command channel. Batteries for the operation of the RS-13 were obtained on location on a rental basis, and the RS-6 was operated from the A. C. mains.

3. The party departed from National Airport at 1015 hours on 11 July, at which point the suitcases containing the equipment were checked through to St. Louis rather than being hand carried, in an effort to determine the ruggedness of the units. At St. Louis a rental car was picked up, luggage and equipment loaded, and then a suitable site was selected for operations. A motel located just west of St. Charles (10 miles west of St. Louis) was picked as it was (a) located on top of a hill and (b) air conditioned. [redacted] contacted the manager and explained what we expected to do 50X1 (cover story - conducting some field strength measurements tests for Department of Defense) and was granted permission to (a) operate from the room and (b) erect such antennas that we needed. Two antennas were erected, the one for the RS-13 extending in a southwesterly direction and about 60' long. It was noted that no damage was incurred to any item as a result of the handling by the airlines.

4. At 0900 EST, on 12 July, the signal plan for the side circuit was activated and contact with the base at [redacted] was established. At 50X1 0930 EST the signal plan for the RS-13 was activated and transmissions of dots were started. Propagation characteristics during the course of the morning was such that message transmissions were not attempted, but it was noted that conditions were steadily improving. As most transmissions were around 7 mcs, it was decided to increase the length of the RS-13 antenna in an effort to get better loading, so approximately 45' of wire was added during the noon lunch break. The longer antenna, and the improved propagation characteristics combined to allow good reception of the RS-13 signals at [redacted] with the result that message transmissions 50X1 were requested. The first message was a 50 group tape wound onto the keyer spool and loaded in the proper manner. When the transmitter function switch was set to "MSG" the tape speed was very erratic and the keyer was shut off. A second 50 group tape was then inserted in the keyer and the selector set to "MSG." This time about two thirds of the tape pulled through before jamming. A message was sent over the side circuit indication equipment failure and requesting base to stand by. It was determined

that galling and seizing of the reel was occurring at the bearing surface where the reel fits in the slot of the keyer. A small amount of lubricant was applied and the unit tested. A third 50 group message was then transmitted and [redacted] reported solid copy. A number of other messages were transmitted, several 100 groups long, from which the base indicated good copy. At approximately 1530 hours, base instructed field to close down and to procede to Denver for further testing on Thursday, 14 July. 50X1

5. All equipment was again turned over to the airlines for shipment and was picked up in Denver with no apparent damage. A motel was selected, this time on the basis that they had a vacancy. Again [redacted] contacted the manager with our problem and permission was granted to operate from the motel. The side circuit signal plan was activated at 1000 EST 14 July, without effecting contact with the base. At 1030 EST the RS-13 circuit was activated and this too without results. At 1100, a phone call to the base revealed that our signals were not getting through, a fact which was suspected as we were unable to hear WWV most of the time on any frequency. Later, a phone call from the base to us activated a blind broadcast plan which involved five minutes of automatic dot transmission at each hour and at ten minute intervals thereafter until the deactivate time specified by the basic RS-13 signal plan. The interval five minute period was used to attempt contact with the base on the side circuit. At no time during the entire day was satisfactory contact established on any frequency with either piece of equipment, with the net result that tests from Denver were unsuccessful. Our peace of mind was not improved Thursday evening when the rented batteries were returned to the filling station where the general manager attempted to repudiate the agreement arrived at between us and the night manager from whom we had obtained the batteries the evening before. He claimed these were now used batteries unfit for resale and as we had paid for them they were now our problem. (Our policy involved making full price cash deposit at any time we were compelled to use new batteries when regular rental batteries were not available.) About thirty minutes of conversation later the manager agreed to accept return of the batteries for a two dollar each rental fee. On Friday, 15 July, all equipment was checked through to Washington and then delivered to the Laboratory on 18 July. 50X1

6. In conclusion, it was felt that the tests were successful despite the problems in Denver. Certain deficiencies of the RS-13 units were noted which will be corrected in the event further development is undertaken in the future. These deficiencies are of a mechanical nature which primarily involves a redesign of the keyer assembly rather than electronic shortcomings as the unit performed quite satisfactorily at all frequencies.

[redacted] 50X1